

REMARKS

The Examiner notes that the declaration is defective because the citizenship for Sungkwon Hong is incorrect. A new declaration with correct citizenship and noting the application serial number and filing date is submitted herewith.

Claim 5 has been canceled. Claims 1,6, 7, 10-12, 14-16, 20, 24, 32-34 and 38 have been amended. Claims 43-46 have been added. No new matter has been added. Claims 1-4 and 6-46 are currently pending in this application.

Claims 1, 4-12, 16-28, 32-34 and 38-42 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Rhodes, U.S. Patent No. 6,204,524 (Rhodes). This rejection is respectfully traversed.

As amended, claim 1 recites a “pixel sensor cell” comprising, *inter alia* “a photoconversion device comprising a region of a first conductivity type at a surface of the substrate and a region of a second conductivity type below the first conductivity type region” and “a gate located over said photoconversion device.” In a similar manner, claim 8 recites a “pixel sensor cell” comprising, *inter alia*, a photoconversion device having a first doped region of a first conductivity type and a second doped region of a second conductivity type located within said substrate.” Independent claim 8 further recites “a dielectric substance layer formed over the first surface level of said substrate thereby forming a second surface level” and “a polysilicon layer formed over said second surface level.”

Amended independent claim 20 recites an “imager” comprising, *inter alia*, “an array of pixel sensor cells, each pixel sensor cell having a photoconversion device . . . said photoconversion devices being located within said substrate and comprising a region of a first conductivity type at a surface of the substrate and a region of a second

conductivity type below the first conductivity type region" and "photodiode gates located over said substrate first surface level and over said photoconversion devices." Similarly, amended independent claim 24, recites a "processing system" comprising, *inter alia*, and "imager comprising: . . . a photoconversion device located within said substrate and comprising a region of a first conductivity type at a surface of the substrate and a region of a second conductivity type below the first conductivity type region" and "a photodiode gate located over said substrate first surface level and over said photoconversion device."

Independent claim 28 recites a "method of forming a sensor" comprising, *inter alia* "forming a photoconversion device with a pinning voltage (V_{PIN}), said photoconversion device having a first doped region of a first conductivity type and a second doped region of a second conductivity type beneath said first surface level of said substrate" and "forming a photodiode gate including a dielectric substance layer over said first surface level of said substrate, thereby forming a second surface level."

Rhodes fails to disclose the above noted limitations of claims 1, 8, 20, 24 and 28. Specifically, Rhodes fails to disclose a photoconversion device having first and second conductivity type regions. Rhodes relates to a CMOS imager with a storage capacitor in parallel with the photocollection area of the imager. Rhodes at Abstract. Rhodes discloses that the photoconversion device is a photogate device having a photogate and insulating layer, which are over the substrate, and a single n-type doped layer in the substrate and underlying the photogate. The doped layer 120 of Rhodes is not a structure of the photoconversion device, but is a doped layer of the substrate in which Rhodes's pixel is formed. Rhodes does not disclose, or even teach or suggest, that the photoconversion device comprises or is formed having first and second

conductivity type regions as recited in claims 1, 8, 20, 24 and 28. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 13-15, 31 and 35-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rhodes. This rejection is respectfully traversed.

As discussed above, Rhodes fails to disclose, teach or suggest all limitations of independent claims 8 and 28. For at least these reasons, withdrawal of this rejection is respectfully requested.

In view of the above amendment, applicants believe the pending application is in condition for allowance.

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Respectfully submitted,

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